

1. A vehicle communication system comprising:

a first system component adapted for mounting in a first vehicle, said first system component having a transceiver, means to determine the heading of said first vehicle, and means for visual display of indica to the driver of said first vehicle;

a second system component adapted for mounting in a second vehicle, said second system component having a computer, means to determine the directional travel of said second vehicle in communication with said computer, means to broadcast a pilot signal on said pilot channel and means to receive transmissions from said transceiver in operative communication with said computer;

said first system component having a default mode wherein said transceiver monitors said pilot channel for said pilot signal;

said first system component having a respond mode triggered by receipt of said pilot signal broadcast from said second system component;

said first system component having a display mode, triggered by a second signal from said second system component, wherein said visual display provides a visual warning of the proximity of said second vehicle to said driver of said first vehicle;

said first system component, in said respond mode, transmitting a response signal to said second vehicle component, said response signal including at least said heading of said first vehicle;

means for said second system component to determine the separation distance between said first vehicle and said second vehicle; and

5 a trigger signal broadcast by said second system component, said trigger signal triggering said first system component to said display mode should said separation distance fall within predetermined separation parameters.

2. The vehicle communication system of claim 1 wherein said means  
10 for said second system component to determine the separation distance between said first vehicle and said second vehicle comprises:

a ranging signal transmitted by said second system component for receipt by said first system component;

15 a rebroadcasting of said ranging signal along with a delay metric by said first system component back to said second system component;

said delay metric being the amount of time said first system component takes to initiate said rebroadcasting; and

20 said computer programmed to calculate said separation distance from the total time the round trip transmission of said ranging signal and said delay metric.

3. The vehicle communication system of claim 1 additionally comprising:

said trigger signal suppressed should said heading of said first vehicle be away from the direction of travel of said second vehicle whereby said display mode of said first vehicle component is only triggered for first vehicles traveling toward or in the same general direction of said second vehicle.

4. The vehicle communication system of claim 2 additionally comprising:

said trigger signal suppressed should said heading of said first vehicle be away from the direction of travel of said second vehicle, whereby said display mode in said first vehicle component is only triggered for first vehicles traveling toward or in the same general direction of said second vehicle.

5. A vehicle communication system comprising:

a first system component adapted for mounting in a first vehicle, said first system component having a computer operatively programmed and interfaced with a plurality of first system components including:

a transceiver;

means to determine the heading of said first vehicle;

means for visual display of indication to the driver of said

first vehicle;

a second system component adapted for mounting in a second vehicle, said second system component having a computer operatively programed and interfaced with a plurality of second system

5 components including:

means to determine the directional travel of said second vehicle;

means to broadcast a pilot signal on said pilot channel;

means to receive transmissions from said transceiver;

10 said first system component having a default mode wherein said transceiver monitors said pilot channel for said pilot signal;

said first system component having a respond mode triggered by receipt of said pilot signal broadcast from said second system component;

15 said first system component having a display mode, triggered by a second signal from said second system component, wherein said visual display provides a visual warning of the proximity of said second vehicle to said driver of said first vehicle;

20 said first system component, in said respond mode, transmitting a response signal to said second system component, said response signal including at least said heading of said first vehicle;

means for said second system component to determine the separation distance between said first vehicle and said second

vehicle; and

5 a trigger signal broadcast by said second system component,  
said trigger signal triggering said first system component to said  
display mode should said computer of said second system component  
determine said separation distance falls within predetermined  
separation parameters.

6. The vehicle communication system of claim 5 wherein said means  
for said second system component to determine the separation  
10 distance between said first vehicle and said second vehicle  
comprises:

a ranging signal transmitted by said second system component  
for receipt by said first system component;

15 a rebroadcasting of said ranging signal along with a delay  
metric by said first system component, back to said second system  
component;

said delay metric being the amount of time said first system  
component takes to initiate said rebroadcasting; and

20 said computer of said second system component additionally  
programed to calculate said separation distance from the total time  
the round trip transmission of said ranging signal and said delay  
metric.

7. The vehicle communication system of claim 5 additionally comprising:

said first system component installed in a plurality of first vehicles;

5       said computer of said first system component in each of said plurality of first vehicles each programed with a unique identifier;

10       said second system component adapted to communicate a unique trigger signal to a respective first system component of any one of said plurality of said first vehicles; and

15       said unique trigger signal activating only one or a plurality of said first system components identified by their respective unique identifier, whereby said second system component may transmit a trigger signal or one or a plurality of first system components in different first vehicles based on their respective unique identifiers.

8. The vehicle communication system of claim 5 additionally comprising:

20       said trigger signal suppressed should said heading of said first vehicle be away from the direction of travel of said second vehicle whereby said display mode of said first vehicle component is only triggered for first vehicles traveling toward, or in the same general direction, of said second vehicle.

9. The vehicle communication system of claim 6 additionally comprising:

5       said trigger signal suppressed should said heading of said first vehicle be away from the direction of travel of said second vehicle whereby said display mode of said first vehicle component is only triggered for first vehicles traveling toward, or in the same general direction, of said second vehicle.

10       10. The vehicle communication system of claim 7 additionally comprising:

15       said trigger signal suppressed should said heading of any of said plurality of said first vehicles identified by said unique identifier, be away from the direction of travel of said second vehicle whereby said display mode of said first vehicle component is only triggered for first vehicles traveling toward, or in the same general direction, of said second vehicle.

20       11. The vehicle communication system of claim 5 wherein said means for said second system component to determine the separation distance between said first vehicle and said second vehicle comprises:

      said first system component having a first GPS receiver generating a first location identifier;

      said second system component having a second GPS receiver

generating a second location identifier;

said response signal from said first system component, in said respond mode, transmitting a response signal to said second system component, said response signal including said second location identifier; and

said computer of said second system component calculating said separation distance using said first location identifier communicated in said response signal and said second location identifier.

12. The vehicle communication system of claim 11 wherein:

said first location identifier includes the position, heading and speed of said first vehicle;

said second location identifier includes the position, heading, and speed of said second vehicle; and

said computer of said second system component programmed to continuously calculate said separation distance in real time and initiate said trigger signal should said separation distance fall into said predetermined parameters, and cease said trigger signal should said separation distance fall outside said predetermined parameters.



13. The vehicle communication system of claim 7 wherein said means for said second system component to determine the separation distance between any of said plurality of said first vehicles and said second vehicle comprises:

5        each said first system component having a first GPS receiver generating a first location identifier;

         said second system component having a second GPS receiver generating a second location identifier;

         said response signal from any of said first system components,  
10        in said respond mode, transmitting a response signal to said second system component, said response signal including said unique identifier of said individual first vehicle and a second location identifier of said individual first vehicle; and

         said computer of said second system component calculating said  
15        separation distance between said second vehicle and any or all of said plurality of first vehicles using said first location identifier communicated in said response signal and said second location identifier.

20        14. A vehicle communication system comprising:

         a first system component adapted for mounting in a first vehicle, said first system component having a computer operatively programed and interfaced with a plurality of first system components including:

a transceiver;

means to determine the heading of said first vehicle;

means for visual display of indication to the driver of said first vehicle;

5 a second system component adapted for mounting in a second vehicle, said second system component having a computer operatively programmed and interfaced with a plurality of second system components including:

10 means to determine the directional travel of said second vehicle;

means to broadcast a pilot signal on said pilot channel;

means to receive transmissions from said transceiver;

means to communicate location and directional travel to a remote monitoring station;

15 means to control intersection signal lights in the direction of travel of said second vehicle;

said first system component having a default mode wherein said transceiver monitors said pilot channel for said pilot signal;

20 said first system component having a respond mode triggered by receipt of said pilot signal broadcast from said second system component;

said first system component having a display mode, triggered by a second signal from said second system component, wherein said visual display provides a visual warning of the proximity of said

second vehicle to said driver of said first vehicle;

said first system component, in said respond mode,  
transmitting a response signal to said second system component,  
said response signal including at least said heading of said first  
5 vehicle;

means for said second system component to determine the  
separation distance between said first vehicle and said second  
vehicle;

a trigger signal broadcast by said second system component,  
10 said trigger signal triggering said first system component to said  
display mode said should said computer of said second system  
component determine said separation distance falls within  
predetermined separation parameters; and

said second system component continuously updating said remote  
15 monitoring station as to location and direction of travel and  
control said intersection control lights in the direction of travel  
of said second vehicle.

15. The vehicle communication system of claim 14 further  
20 comprising:

said remote monitoring station capable of communicating said  
location and direction of travel of said second vehicle to one or  
a plurality of remote additional second vehicles.